

Minimum Wages and the Welfare of Different Types of Workers in Honduras

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September 2006

Abstract:

Taking advantage of a complex minimum wage structure in Honduras, this paper examines how changes in minimum wages over the 1990-2004 period affect the employment and wages of workers in medium and large-scale firms (of 16+ workers) v. small firms in the private sector, where minimum wages apply and for civil servants and self-employed workers, where minimum wages do not apply. The evidence suggests that minimum wages are effectively enforced only in medium and large-scale firms, where the elasticity of the wage to the minimum wage is 0.208 and the elasticity of employment to the minimum wages is 0.530. In the small firm covered sector increases in minimum wages lower the average wage (elasticity of -0.190) and increase employment (elasticity 0.430), which is consistent with the two-sector competitive model of a labor supply shift from the large to the small scale sector. There is no measured effect on employment of all workers in the uncovered sectors. However, raising the minimum wage increases unemployment significantly (elasticity 0.843). Looking more closely at the impact on the less-skilled in the medium to large scale sector, we find that the job loss outweighs the wage gain. As for other low wage workers, we find, with one exception, no evidence that minimum wages directly or indirectly improve the wages and employment opportunities of women, young, rural and secondary earners.

JEL: J23, J31, J38

Key Words: minimum wage, employment, wage, Central America, Honduras

Acknowledgements: We would like to thank DFID for supporting this research and the collaborative effort of individuals in Honduras who made this study possible: Miriam Montenegro, Domingo Ordóñez and Julio Raudales at the Technical Secretariat of the Presidency, Dr. Ian Walter (Economic Advisor to the President) and Jorge Monge, of DFID. Numerous Honduran Civil Servants gave us comments, important institutional knowledge and the data including Manuel Rodríguez and Mario Ochoa (Central Bank), Bernardo Mejía and Rafael Su (Ministry of Labor); Elizabeth Ribera (Finance Secretariat), and Magdalena García (National Institute of Statistics, INE).

1. Introduction

A substantial number of studies have shown that earnings inequality of workers in both the developed and developing countries has widened with the onset of globalization, and that rising wages of skilled workers relative to unskilled workers is an important cause of this increase in inequality. Various explanations exist for the rising relative wages of the skilled to unskilled workers in Asia, Latin America and the US during the 1980s and 1990s. The explanations tend to focus on three areas: trade liberalization, skill-biased technological change (SBTC) and labor market institutions.

Some claim trade liberalization is the primary source shifting demand out for more skilled workers, offering mechanisms other than those proposed in the Heckscher-Ohlin and Stolper-Samuelson models. However, the evidence is not always consistent. For example, Dollar and Kraay (2001) found that the share of earnings of the poorest quintile of the population is not affected by greater openness, while Lundberg and Squire (1999) find that more openness does lead to higher inequality. Wood (1997) concludes from a survey of the literature that increased openness is associated with increased inequality in Latin America in the 1990s, but with reduced inequality in the Asian Tiger economies in the 1970s and 1980s.¹

There is a large literature using evidence from the US and UK, which argues that the rise in the ratio of wages of skilled to unskilled is being driven by SBTC (e.g., Berman, Bound and Machin, 1998; Card and Dinardo, 2002; Feenstra and Hanson, 1996). The internet and other new technology has increased the productivity of and demand for more skilled workers but it has also facilitated and been facilitated by

¹ Studies which have found increases in wage inequality in Latin America after trade liberalization include Robbins (1995) for Chile; Robins, Gonzales and Menendez, (1997) for Argentina; Robbins and Gindling (1999) or Costa Rica.

globalization. Some researchers argue that SBTC is being driven by trade (Pavnick et al., 2002 for Brazil) and others by foreign direct investment (Feenstra and Hanson, 1997, for Mexico; Skuratowicz, 2000, for Poland; Wu, 2001, for China).

Inequality in labor income can also result from changes in labor market institutions. For example, the erosion of the minimum wage and the loss of trade union power have been blamed for falling earnings of unskilled workers and rising inequality in the US in the 1980s and early 1990s (e.g., Card, 1996 and Dinardo, Fortin and Lemieux, 1996). Similar results can arise in countries where compliance with minimum wage legislation is poor, irrespective of whether they keep pace with inflation (e.g., Rama, 2003).

This paper contributes to our understanding of how one labor market institution – the minimum wage – affects the welfare of different types of workers in developing countries. We ask whether an effective minimum wage policy can act as a countervailing force to globalization. A worker's welfare is a function of both her employment and her wage (among other things) and although the goal of minimum wage policy is to redistribute labor income to low paid workers, its final impact is difficult to predict as it depends on a number of factors such as how competitive labor markets are, to what extent minimum wages are enforced, what the coverage is, etc.

We take advantage of Honduras' complex minimum wage structure, with its greater variation than that of the U.S. or U.K., to examine the welfare (employment and wage) effects on workers in different sectors. Since 1990 over 22 minimum wages, set by industry and firm size, have applied to employees in the private sector, but have also been used indirectly for wage setting in the public sector. There is also a large group of

workers (the self-employed) for whom minimum wages do not apply directly, but whose wages and employment can be affected indirectly through the mobility of workers across sectors in response to changes in the minimum wage. We combine micro data from twenty-four household surveys² in Honduras conducted during 1990 to 2004 with data on minimum wages to determine employment and wage elasticities for workers in both small and large firms in the private sector, who are covered by minimum wage legislation, as well as the self-employed and public sector workers, who are not covered by minimum wage legislation. We then focus on low-wage workers and estimate the wage and employment elasticities for the unskilled, young, rural, women, and secondary earners in the household as well as their higher wage counterparts (skilled, old, urban, men and heads of households).

The evidence suggests that minimum wages are effectively enforced only in medium and large-scale firms (of 16+ workers) where the elasticity of the wage to the minimum wage is 0.208 and the elasticity of employment with respect to the minimum wage is -0.530. They are not enforced in the small firms where we see a much larger percentage of workers earning less than the minimum. We find that increases in minimum wages actually lower the average wage in the small firm covered sector (elasticity of -0.190) and increase employment there (elasticity 0.430), which is consistent with the two-sector competitive model. There is no measured effect on employment in the uncovered sectors: the self-employed, unpaid family workers and the public sector. However raising the minimum wage increases unemployment significantly (elasticity of 0.843).

² Encuesta Permanentes de Hogares de Propósitos Múltiples

Looking more closely at the impact on the less-skilled (with primary education or less) in the large-scale sector, we find that higher minimum wages increase wages of the less-skilled (with an elasticity of 0.294) however the employment elasticity for the less-skilled is quite large (-1.369). The implied elasticity of labor demand of over 4 indicates that the less skilled in the large-scale sector are losing their share of earnings from the minimum wage policy. In other words, few low-skilled workers (in the large firm sector) gain from the minimum wage at the expense of the many that leave large firm employment. However, there is some evidence that in response to the minimum wage, some unskilled workers are being hired in the public sector, potentially substituting for skilled workers there. As for other low wage workers, we find, with one exception, no evidence that minimum wages directly or indirectly improve the wages and employment opportunities of women, young, rural and secondary earners in the household.

2. Minimum Wages as a Redistributive Tool

An effective minimum wage can shift the earnings distribution in favor of the low-paid worker and shrink the bottom tale of the income distribution. However, it can also reduce the share of total earnings going to low-paid workers by displacing many from employment. As Freeman (1996, p. 639) notes in an article with the title of this section; “The goal of the minimum wage is not, of course, to reduce employment, but to redistribute earnings to low-paid workers.”

The impact of minimum wages on the welfare of low-paid workers is not easy to predict as it is a function of how minimum wages are set (in terms of level and coverage),

how well they are enforced, and to what extent the labor market is functioning competitively or more like the monopsonistic model.³

The competitive model predicts that workers whose marginal product falls below the new decreed minimum will be priced out of the market. Obviously, how high the minimum wage is set relative to the marginal product or market wage is an important factor in determining how large of an impact it will have on wages and employment. The elasticity of demand is also important; if it exceeds one, an increase in the wage will reduce rather than increase the share of earnings going to low-wage workers. As we know, factors such as the ability of the employer to substitute low-paid unskilled workers with slightly more skilled workers, the technology that the employer uses, and the share of low-paid labor's the wage bill to the total cost of production will shape the elasticity of their demand.

The models of the labor market based on some form of imperfect competition predict workers will earn a wage below their marginal product and an increase in the minimum wage can, up to a point, increase wages without reducing employment. Factors that can give rise to imperfection competition in the labor market include incomplete information, imperfectly mobile workers and monopolistic power on the part of the employer. (See Manning, 2003 for a review of this theory and the empirical literature.)

If minimum wage legislation does not cover 100% of the workforce, then the question arises as to its indirect impact on the uncovered sector.⁴ The classical two-sector competitive model predicts that workers whose marginal product falls below the new

³ See Brown (1999) for an extensive discussion of the theoretical models of minimum wage policy and empirical literature as of the end of the 1990s.

⁴ Of course, non-compliance with the minimum wage legislation in some sectors can effectively create a non-covered sector as well.

decreed minimum will be priced out of the covered sector market and will look for work in the uncovered sector, lowering wages and raising employment there. The number of workers seeking jobs is largely determined by the elasticity of demand in the covered sector while the extent to which employment rises and wages fall in the uncovered sector is a function of the size of the labor supply shift and the elasticity of demand there. It is also possible that wages will not fall in the uncovered sector if unemployment rises sufficiently (see Mincer, 1976). Growth in the ranks of the unemployed is of course a function of the absorptive capacity of the uncovered sector (and institutions such as the generosity of unemployment benefits). But other mechanisms in the labor market can lead to the outcome of higher wages in both the covered and uncovered sectors as a result of minimum wage increases. For example, Saint-Paul (1994) shows that in response to higher wages in the urban area (triggered by higher minimum wages), capital will flow to the rural areas and increase the demand for labor there. McIntyre's (2004) model, which reflects the Brazilian labor market, shows how informal sector wages can rise with a rise in minimum wages in the formal sector.

Hence adjustments to the minimum wage can have very different effects on the wages and employment of workers depending in which sector they are found, their skill level, etc. making it difficult to predict the redistributive/welfare effects of the minimum wage on different groups of low-paid workers.

3. Data: Minimum Wage Decrees and Household Surveys

The data for this study come from two principal sources: 1) the Minimum Wage Decrees and 2) the Permanent Household Surveys for Multiple Purposes (PHSMPs).

Honduras first fixed a minimum wage (MW) in 1974. Over the years it has been set either by the tripartite Commission (of workers, employers and government) on Minimum Wages or directly by the President of the Republic. From 1974 to 2004 the MW was adjusted 30 times, with a higher frequency in the last 15 years: i.e., it was changed two times in the 1970s and again two times in the 1980s but 17 times in the 1990s and nine times in the first four and a half years of 2000s. See appendix Table A1 for the dates of the Decrees. Half of these adjustments have been made through the Tripartite Commission and the other half by an Executive Decree from the President's office. In most of the period under study (1990-2004), the decision has come from the President's office since the members of the Commission could not agree.⁵

The MW applies to all salaried employees in the private sector and a separate wage grid (set by statutes and by the Law for Civil Service) applies to public sector employees who are not covered by union agreements. However, among the unionized civil servants, there are two groups whose base wage has at times been adjusted with a formula tied to MW adjustments during the period under study: medical staff and teachers. Medical staff has had their base wage set as a multiple of the private sector's MW since 1997 (article 34 of decree 161-97). For example, general doctors' base wage is 12 times the MW whereas specialized doctors' base wage is 14 times the MW. Teachers' wages have also been adjusted since 1997 according to a formula based on the MW: Their wages have been raised by 0.7132 times the average of the lowest and the highest minimum wage raise.

⁵ The information on the structure of minimum wages was gathered from interviews with staff at the Ministry of Labor and Social Security in Honduras and from a report by the Secretaria de Trabajo y Seguridad Social (2003).

Honduras has always had more than one minimum wage. During the period under study, there were over 22 categories of minimum wages defined by the firm's size, economic activity and, for some years, location. The industry grouping is similar to the one-digit ISIC classification, but there are also special MWs for the exporting sector.⁶ During the 1990-95 MWs were set for three firm sizes (1-5, 6-15, and 16+ employees) but since then there have only been set for two firm sizes (1-15 v. 16+ employees). From 1990-1995 there were also different MWs for three regions: one for the two largest cities (Tegucigalpa and San Pedro Sula) and the department of the Islands of Bahia; one for medium-sized cities; and one for the rest of the country. This was reduced to two in 1995-96 (largest cities and other) but has been dropped as a dimension of minimum wages since then.

Appendix Table A2 contains the data on MWs from the decrees that we use in our analysis. These are daily minimum wages deflated to December 1999 prices using the monthly Consumer Price Index provided by the Bank of Honduras. In our empirical work we take into account 22 minimum wage categories for each year for small (1-15 employees) and large (16+) firms in eleven industries.⁷ We note that the minimum wage for large firms was on average 18% higher than for small firms during 1990-2004, and that the large-firm/small-firm gap was larger in Agriculture, Mining, Manufacturing, Construction, Commerce and Tourism, and Communal Services (where the gap was about 22%) and smaller in Financial Services (where the gap was about 6%).

⁶ Until 1996 there was a minimum wage for exporters of specific products (e.g., tobacco, coffee, shellfish, certain fruits) as well as service related to the transportation and export of these goods (e.g., shipping, docking, railway repair). Since 1996 there has been an additional MW for those who temporarily import without a tariff and who export less than 80% of their production (the RIT – Régimen de Importación Temporal).

⁷ During 1990-1995, when there were different MWs for firms with 1-5 and 6-15 employees, we chose to use the MW decreed for the 6-15 employees as the minimum wage for 'small firms.'

The second data set we use is the Permanent Household Surveys for Multiple Purposes (PHSMP), which has been a nationally representative survey of households since 1990.⁸ Over the period under study the survey was carried out one to two times a year.⁹ The basic survey instrument did not change appreciably during 1990-2004; hence we have comparable data on a large sample (an average of 13,400 workers) at each point in time. We note however that these are not panel data on the same workers.

We show in appendix Table A1 the dates the PHSMPs were carried out over 1990-2004 and the corresponding MW decree that was in effect at each date. We use data from only 22 of the 24 surveys since we are not able to use the October 1993 and September 1996 PHSMPs because the former does not contain data on the earnings of self-employed workers and the latter does not have data on workers in the rural areas.

Given the PHSMP provides information on the economic activity, firm size, and location of each person's job, we are able to append to each worker and each unemployed person who has worked before the minimum wage that corresponds to his/her job in a given month and year. We only use minimum wage data for small firms and large firms in part because the PHSMP only supplied information on two firm sizes.¹⁰ Melding the industrial structure from the decrees to the structure presented by the PHSMP was fairly straightforward although, we had to drop the "export sector" minimum wage since we do not know from the PHSMP if the worker's firm is export oriented or not.

⁸ The exception is that the survey taken in September 1996 only covers the urban population.

⁹ However, in 2000 no surveys were taken because of the turmoil created from Hurricane Mitch in December 1999.

¹⁰ We are unable to make use of the MWs decreed for the three firm size categories in 1990-1995 because the PHSMP only shows two firm size categories in those years (and up to 1999): i.e., 1-9 employees and 10+ employees. For those years, the MW that was assigned to workers in firms with 10+ employees corresponds to the MW decreed for large firms of 15+ employees. We are able to distinguish firm size of 1-15 and 16+ employees for the 2000-2004 period.

The daily MWs were converted into monthly MWs in order to have them in the same units as the salary data in the PHSMP. According to the Directorate of Salaries in the Ministry of Labor, employers are required to pay 30 daily MWs in a month. We also calculated an hourly minimum wage = Monthly MW/(4.3 x 44), which assumes an average of 4.3 weeks a month and that full time work is 44 hours a week.¹¹ The hourly wage was calculated by dividing the monthly salary (provided in the PHSMP) by the number of hours the worker indicated he/she had worked per week times 4.3 (weeks/month).¹²

In order to get a sense of the variation in the real MW over time in relation to the real wage, we plot in the first graph of Figure 1 the average real hourly MWs and wages (in Lempiras, December 1999 prices) of all private sector salaried workers for each survey date during 1990-2004.¹³ It is clear that the average salary is rising more rapidly over time than the minimum wage as the gap grows between the two. The second graph contains the plots the ratio of the average minimum wage to the average wage salary. The trend of the ratio indicates that the minimum wage was relatively high in terms of the average wage from March 1990 to March 1993 (when it averaged about 0.64), fairly constant during October 1993 until September 1999 (with an average of 0.49), and rising rose from September 1999 (when it was at its lowest rate of 0.43) until May 2004 (when it reached 0.56).

¹¹ In Honduras, full-time work for private sector employees is defined in the labor code as 8 hours a day for five days plus one half-day on Saturday.

¹² Observations with missing data on any of the key variables (labor earnings, hours worked, sector, etc.) were deleted. Observations with hours worked coded as zero were also dropped. If hours worked is coded as > 96, we set it to 96.

¹³ These MWs are averaged over all full-time workers, hence over large and small firms, in the PHSMP. In all of these figures there are no minimum wage data for October 1993, September 1996 and 2000, given the lack of proper data in the surveys as noted earlier.

In Figure 2 we show the average real hourly MWs (in December 1999 prices) in each industry over time.¹⁴ We note that the many of the industry average minimums do not follow the same trend and that there is a considerable range, more in the early 1990s (with an 8 Lempira gap between lowest and highest industry average) than in recent years (with about a 5 Lempira gap). Three industries demonstrate persistently high minimum wages -- non-metallic mining, electricity and the financial services -- which are on average about 64% above the lowest minimum (small firms in agriculture). Another three industries -- construction, manufacturing, commerce and hotels -- have persistently low minimum wages, hovering around 6% to 10% above the lowest minimum.

4. Compliance with the Minimum Wage

Before examining the impact of minimum wage legislation, it is important to detect the level of compliance. We begin by noting that as in most countries, including the US, there are relatively few resources devoted to monitoring compliance by employers in Honduras.¹⁵ The Directorate of Salaries in the Ministry of Labor, which is in charge of ensuring that compliance, has only four inspectors available to follow up on complaints and carry out random inspections for the entire country. Fines to employers can be stiff: a) up to two years back pay of the difference between the salary of the worker and the minimum wage and b) 100-600 Lempiras, depending on the characteristics of the employer.¹⁶ However, it is unlikely that very small employers are able to pay them. Not surprisingly, and given the scarce resources, Ministry of Labor inspectors focus enforcement efforts almost entirely on larger firms.

¹⁴ I.B.I.D.

¹⁵ Freeman (1996, p. 647) notes that in 1993 the US Department of Labor had 804 inspectors to handle monitoring of the Fair Labor Standards Act, which includes regulations of hours worked and overtime pay, as well as the minimum wage.

¹⁶ This is approximately \$5-\$32, using 2006 exchange rates.

There are several ways to check for compliance in the data. A straightforward method is to look for spikes in the wage distribution at or around the minimum wage. Studies of the U.S. have generally found such a spike (e.g., Dinardo et al., 1996; Neumark et al., 2000) but the evidence of spikes is mixed for developing countries (see e.g., Maloney and Núñez, 2003 for evidence for Argentina, Brazil, Chile, Colombia, Mexico and Uruguay; Faynzilber, 2001 and Lemos, 2004 for Brazil, and Gindling and Terrell, 2005 and 2006 for Costa Rica). However, given the number of minimum wages in Honduras, we simplify the graphical analysis by plotting the kernel density estimate of the log wage minus log minimum wage for each worker. A zero indicates that the worker is earning the legal minimum wage. In Figure 3 we plot the distribution of the log wage minus log minimum wage separately for: the large firm covered sector, the small firm covered sector, self-employed workers and the public sector. If legal minimum wages are enforced in a particular sector, we would expect to see the distribution of wages censored from below at the level of the minimum wage, with no (or very few) workers earning below the minimum wage. We might also expect to see a density at zero (at the minimum wage) to be higher in the covered sector than in the uncovered sector. This is what we see in the kernel density estimates in the top left panel of Figure 3 for covered workers in large firm -- there is a large spike at the minimum wage and there is a clear censoring of the distribution below the minimum wage. On the other hand, the distribution of wages in the small firm covered sector, among self-employed workers and in the public sector are not censored; they look very close to a normal distribution. While there is a small spike in the distribution of public sector workers at the level of the

minimum wage, there is no spike at all in either the small-firm covered sector nor among self-employed workers.

Another way to summarize the information presented in Figure 4 is to calculate the average share of workers earning less than the MW, at or more than the MW within each of these four sectors, as we do in Table 1.¹⁷ We find the share at the MW is substantially higher among private sector employees in large firms (12.4%) than among private sector employees in small firms (9.7%), the self employed (7.1%) or in the public sector (5.3%), again pointing to higher enforcement in the large firm private sector. Similarly, we find relatively fewer workers earn less than 90% of the minimum wage in the large firm covered sector (16.9%) than in the other private sectors (39.8% of the small firm and 43.2% of self-employed workers). The share in the public sector is the smallest – 6.0% -- indicating that the wage grid used there has a higher minimum. Hence the combined evidence of the wage distribution and the average share earning below and at the minimum wage point to better enforcement of minimum wages in the large firm covered sector than in small firms, where we might conjecture there is little to now enforcement.

It may be argued that finding as many as 17% of the workers in the large firm covered sector earning below the minimum is an indicator of poor enforcement. There are many reasons to believe that our calculations of the share of workers earning below the MW is overestimated here and in the small firm sector. For one, we do not take into account the fact that apprentices are allowed to earn less than the MW for the first six months of their training. Moreover, we know some people earn part of their salary in

¹⁷ We use a bound of 10% to allow for measurement error so that we are actually measuring the share earning less than 0.9 of the MW, within 0.9 and 1.1 of the MW and more than 1.1 of the MW.

commission (as in commerce) or in tips (as in services) and we do not have record of this. Persons paid in a piece rate (as in manufacturing) may have difficulty calculating their monthly salary and the errors could go either way. However, an important reason that we may be overestimating the number earning less than the legal MW is that we have not taken into account the fact that the law stipulates that an employer has the right to pay as little as 70% of the MW to a worker provided with food and housing; 80% of the MW if only food or housing is provided.

We have information available in the PHSMF on who is receiving in kind payments for food and housing, but unfortunately, this information is only available from June 1997 to May 2004. According to the May 2003 and May 2004 surveys, about 16 percent of the private sector employees receive food and housing in their work and approximately 62 percent of these workers were paid less than the minimum wage.¹⁸ Using the 1997-2004 data, we have recalculated the share earning below the MW with the correction that assumes that anyone who received either food or clothing could be paid 80% of the minimum wage in effect at that time and not be considered to be “earning below” the minimum. Similarly, anyone who received both food and housing could be paid 70% of the minimum and be considered to be earning the minimum. We find that this adjustment lowers the share earning below the legal minimum wage by 3 percentage points (to 14.1%) in the large firm private sector and by 5 percentage points in the small firm sector (to 34.7%).

¹⁸There is of course variation among sectors, with the highest share (25%) being in services, where the domestics are found, and the lowest being in utilities and financial establishments (around 6% on average).

We showed that minimum wages are effectively enforced only in the large firm covered sector and potentially impact public sector wage setting as well. How do the characteristics of workers in these two sectors compare with those in the small firm covered (but not enforced) sector and the self employed? We show in Table 2 that compared to workers in the other two private sectors, workers in the large firm covered sector and in the public sector are: better educated; more likely to work in the relatively higher-paying urban area, more likely to work in the relatively high-paying sectors of industry and financial services and less likely to work in the relatively low-paying sectors of agriculture, construction and services. Therefore, this suggests that legal minimum wage legislation is enforced and disproportionately affects the wages of relatively higher-paid workers.

5. Econometric Methodology

Given our understanding of how the MW policy is implemented and enforced, we follow a strategy of estimating the impact of MWs on wages and employment separately for large-firms in the private sector, small-firms, public sector, and self-employed. We will also examine the impact of minimum wages on the level of unemployment, and a sector that may be considered nearly unemployed if not a measure of poverty: unpaid family workers.

Estimating the effect of minimum wages fraught with econometric issues, including the pervasive problem of endogeneity (e.g., minimum wages and wages/employment are being set simultaneously in response to changes in demand conditions). It is therefore important to use a method that controls for this and using panel data, can be extremely helpful in this regard. We construct panels of wage and

employment levels, legal minimum wages, and other control variables by industry and firm size for each survey from 1990 to 2004. Using this industry/firm size panel data set we estimate, separately for each sector, an equation of the form:

$$\ln W_{ift} = \alpha_0 + \alpha_1 \ln MW_{it} + \bar{X}_{ift} \beta + \sum_{t=1}^T \gamma_t YR_t + \mu_{it}, \quad (1)$$

where $\ln W_{ift}$ is the log of the mean hourly wage in industry I and firm size f at time t . The explanatory variables include the log of the real hourly minimum wage (in 1999 Lempiras) that applies to that firm size and industry at time t , $\ln MW_{it}$. The coefficient α_1 is an estimate of the elasticity of the wage with respect to changes in the legal minimum wage. Other explanatory variables include the vector X_{it} , of average values of human capital variables for each industry/firm size (years of education, experience, experience squared, the proportion male, and the proportion living in urban areas). We include fixed effects for the month and date of the survey, YR_t , to control for changes in the survey design and any time-specific factors such as aggregate supply and aggregate demand changes or changes in the timing of the surveys. To control for industry-specific fixed effects and for the endogenous correlation of employment and minimum wages across industry categories we estimate Equation 2 with a fixed-effects specification. In the estimation, each cell is weighted by the average (over all years) number of workers for that industry/firm size category.

In order to estimate the effect of the MW on employment, we use the industry/firm size panel data to estimate an equation of the form:

$$\ln EMP_{ift} = \alpha_0 + \alpha_1 \ln MW_{it} + \bar{X}_{ift} \beta + \sum_{t=1}^T \gamma_t YR_t + \mu_{it}, \quad (2)$$

where $\ln EMP_{ift}$ is the log of the level of employment in industry I , firm size f in survey t and the explanatory variables are the same as in equation (1). The coefficient α_I is an estimate of the elasticity of the employment with respect to changes in the legal minimum wage.

Standard fixed effects estimates may result in inconsistent coefficient estimates because: (a) minimum wages, average wages and employment may be endogenously determined and (b) inertia in labor markets can result in partial adjustment over time to the minimum wage change, leading to an autoregressive (serially correlated) error structure. We address both issues by using the dynamic panel data model developed by Arellano and Bond (1991). The Arellano and Bond estimator is a first-difference GMM estimator of a simple AR(1) model, and as such addresses the partial adjustment issue. The Arellano and Bond estimator addresses the issue of endogeneity by using lagged values of the minimum wage as instruments for this endogenous variable. We estimate the one-step GMM Arellano and Bond (1991) estimator using up to three lags of the minimum wage as instruments. The estimated standard errors we report are robust to the presence of heteroskedasticity.

6. Findings

6.1. Impact on Wage and Employment for All Workers in Each of the Four Sectors

Table 3 presents estimates of the wage and employment effects (coefficient on the log of MW in equations 1 and 2, respectively) using the industry/firm level panel data sets. We present both the "simple" fixed effects estimates and the Arellano and Bond (1991) estimates.

The fixed effects estimates of the wage effect in Panel A suggest that higher minimum wages increase wages in the large firm covered sector and in the public sector, while higher minimum wages lower wages in the small firm covered sector. Specifically, the fixed effects estimates suggest that an increase of 10% in minimum wages would increase wages in the large firm covered sector by 2.12% and in the public sector by 3.74%. At the same time, these estimates suggest that an increase in legal minimum wages of 10% would decrease average wages in small covered sector by 0.2%. The fixed effect estimates find no significant effect of minimum wages on the wages of self-employed workers.

Endogeneity exists because minimum wages may be changed based on the demand and supply conditions in a particular industry, which will also affect actual wages in the same way. This endogeneity creates spurious positive correlation between average wages and minimum wages. Therefore, correcting for this endogeneity should lower the value of the coefficient on the minimum wage variable. As expected, when we use the Arellano-Bond estimates, the coefficients on the minimum wage variable (in Panel A) fall. The Arellano-Bond estimates suggest that higher minimum wages increase wages in the large firm covered sector, decrease wages in the small firm covered sector, and have no impact on wages in the public or self-employed sectors. Specifically, the Arellano-Bond estimates suggest that a 10% increase in legal minimum wages will increase average wages in the large firm covered sector by 2.08% and reduce wages in the small firm covered sector by 1.90%. Unlike in the fixed effects estimates, the Arellano-Bond estimates suggest that minimum wages do not have a significant effect on average wages on the two uncovered sectors: the public sector and the self-employed.

We also show in Panel A of Table 3 the probability values (p-values) for some diagnostic statistics to test whether the data is consistent with the assumptions of the Arellano and Bond (1991) estimator. The Sargan statistic tests the overidentification restrictions, and is a test of whether the instruments are uncorrelated with the error terms in the estimated equation. Since the p-values for the Sargan statistic are large (above .10), we can reject the hypothesis that the instruments are correlated with the error terms, and we can conclude that the instruments are well specified. We also present two tests derived by Arellano and Bond (1991) of whether the data are consistent with an AR(1) and/or AR(2) structure. If the p-values for these statistics is large (above 0.10), then we can reject the hypothesis that the data is not autoregressive of order 1 or 2. Since the Arellano and Bond (1991) estimator assumes that the data is autoregressive of order 1 and not of order 2), the small p-value for AR(1) and a large p-value for AR(2) implies that there is no evidence that the Arellano and Bond (1991) simple AR(1) model is misspecified.¹⁹

In the competitive model, higher legal minimum wages in the covered sector will cause employers to reduce employment in that sector. The workers who lose their jobs in the covered (large firm salaried workers) sector may become unemployed, may leave the labor force, or may move into one of the uncovered sectors. If those workers enter one of the uncovered sectors, then the increase in supply may reduce average wages in that sector. Given that we found that higher minimum wages are correlated with lower wages in the small covered sector, we suspect that higher minimum wages may be pushing

¹⁹ For the wage and employment equations we also explored the possibility that, even after taking autocorrelation into account, minimum wages have lagged effects on wages and employment. Specifically, we re-estimated the wage and employment equations using one lag and two lags of the minimum wage variable as explanatory variables. In general, the coefficients on these lagged variables were not significantly different from zero.

workers into that sector. In addition to the small firm covered sector, the self-employed sector and the public sector, we also estimate the impact of higher minimum wages on the number of unpaid family workers and unemployed (who have worked before).²⁰

Table 3 presents the results of the estimation of employment equations (3). The diagnostic statistics suggest that the Arellano and Bond model is correctly specified. The p-values for the Sargan statistic are large (above 0.10), indicating that we can reject the hypothesis that the instruments are correlated with the error. We also find a small p-value for the AR(1) test statistic and a large p-value for the AR(2) test statistic, implying that there is no evidence that the Arellano and Bond (1991) simple AR(1) model is misspecified. Thus we have more confidence in the Arellano and Bond estimates than the fixed effect estimates. For that reason, we will focus our discussion of the employment effects of minimum wages to a discussion of the Arellano and Bond estimates.

Both the fixed effects estimates and the Arellano-Bond estimates suggest that higher minimum wages reduce employment in the large firm covered sector. Using the Arellano-Bond estimates, we find an increase in real minimum wages of 1.0% reduces employment in the large firm covered sector by 0.53%. Dividing the elasticity of employment with respect to the minimum wage by the elasticity of the wage with respect to the minimum wage (0.21) yields an estimate of the elasticity of demand in the large firm sector at the point at which the minimum wage is set. It is clearly larger than one, indicating an earnings loss for workers in that sector.

²⁰ Workers who lose their jobs in the large firm covered sector could also leave the labor force. Unfortunately, we do not have data on the industry where those out of the labor force worked before leaving the labor force. Without this information, we cannot assign a minimum wage to those who are not in the labor force.

Where do the workers who lose their jobs in the large firm covered sector go? The Arellano and Bond estimates suggest that a 1.0% increase in minimum wages increases employment in the small firm covered sector by 0.43%. This result is consistent with the hypothesis that higher minimum wages push workers from the large firm covered sector into the small firm covered sector, which in turn results in lower average wages in this sector. The Arellano-Bond estimates also suggest that some workers who lose their jobs in the large firm covered sector become unemployed. Specifically, a 1% increase in legal minimum wages increases unemployment by 0.85%. Higher minimum wages have insignificant effects on employment in the public sector, or among self-employed and unpaid family workers.

6.2. Wage and Employment Effects of Minimum Wages by Skill Level

Changes in wages and employment for all workers in the covered sector reflect the balance of losses and gains to different subgroups. Can minimum wages be used to counter the trend in the widening inequality of earnings with the onset of globalization by redistributing earnings to unskilled workers? To examine this possibility we estimate the impact of legal minimum wages on wages and employment separately for unskilled (less-educated) and skilled (more-educated) workers. The results of the Arellano-Bond estimates of the wage and employment equations are presented in Panels A and B, respectively, of Table 4.²¹

We find that in the sector where minimum wages are effectively enforced (large firms), minimum wages have a large positive effect on the wages of less-skilled worker (elasticity of 0.29 and significant). On the other hand, the negative employment effect is

²¹ Given that the diagnostic tests for the structure of the error term and the identification of the instrumental variable conclude that the Arellano-Bond model is correctly specified we proceed with only this estimator only.

also very large for the unskilled (elasticity of 1.4). Dividing the latter elasticity by the former yields an estimate of the elasticity of the labor demand on the order of 4.7 for the unskilled, signaling a large loss of earnings. On the other hand, there appear to be no spillover effects on the wages or employment of more-skilled workers (where the coefficients are small and not statistically significant).²²

Where do the unskilled workers who lose their jobs in the large scale sector go? Our estimates indicate that they are not moving into the small scale sector but rather into the public sector. We conclude that there may be a substitution effect whereby skilled people are taking some of the jobs of the unskilled in the small scale sector as minimum wages rise. Given that the level of unemployment among the skilled also rises significantly with an increase in the minimum wage, we might also surmise that the rise in the minimum wage is increasing the labor supply of skilled people who were out of the labor force. However, there are many caveats with drawing these conclusions given that we do not have panel data on individuals and cannot follow individual workers over time, and are therefore unable to say with certainty where workers are moving.

6.3. Wage and Employment Effects of Minimum Wages on other Low-Wage Groups

In addition to estimating the impact of minimum wages on skilled and unskilled workers in these various sectors, we have also examined the impact on other relatively low-wage groups – women (Table 5), rural (Table 6), and young (Table 7) – using the same methodology as above. Another way to get a sense of the importance of this legislation for poverty alleviation is to estimate its affect on the main income earner vs. the secondary-earners in the household (Table 8). The argument is that if the incidence

²² Interestingly these coefficients yield a unitary elasticity of demand for the skilled in the large scale sector.

of the MW increase falls on the main income earner more than on the secondary earner, this could hurt/help the family more than if the impact is on the secondary earner.

If minimum wages are to reduce the incidence of poverty and redistribute income to the low wage earner, then we would expect to see these workers experience significant wage increases with small employment loss in the large firm sector where minimum wages are enforced. This expectation is not met in any of these four groups. Whereas the rural and the young experience a higher percentage wage gain on average from an increase in the minimum, they also experience much larger employment losses than their counterpart (urban and older workers, respectively). On the other hand, men and heads of the household (which have a large intersection) experience a significantly higher wage gain from minimum wages than their counterpart (women and non-heads, respectively); the employment losses are not estimated to be different for men and women but are much larger for the non-heads of household than for the heads. Hence there is no evidence supporting the view that minimum wages help lower wage workers in the covered sector where it is enforced.

Are there positive indirect effects resulting from shifts in labor supply across these sectors? On average, moving into the public sector could be seen as a lateral move, if not an improvement. We find that among these groups, it is only women whose employment increases in the public sector as a result of a minimum wage increase (and yet they do not experience any change in their average wage). The standard errors on all the other groups' coefficients in the employment equations are very large indicating no significant change in employment in the public sector for them.

A movement from large-firm employment to employment in the small firm sector or self-employment can be seen as a worsening of the worker's welfare, judging from the differences in the average wages in these sectors.²³ Similarly, a rise in unemployment or unpaid family work is also an inferior outcome. The evidence in Tables 6-9 indicates that, with one exception, employment of lower-wage workers does not rise significantly in any of these four inferior sectors. The exception is significantly increased unemployment for secondary earners or non-heads of households and potentially increases in unemployment for women (whose coefficient is also large and positive but only significant at the 0.15% level).

Summing up this evidence, one must conclude that low wage workers are not made better off directly from the minimum wage increase and that the limited evidence we have suggests that the indirect effects are positive only for some women (who move into the public sector) and appear to be quite negative for secondary earners in the household and some women (who become unemployed). However, these findings must be couched with a large caveat given the structure of the data (grouped worker panels and not individual worker panels) and the structure of our model (which only allows workers to move within the same sector with a change in the minimum wage).

7. Conclusions

As the forces of globalization (whether through trade openness or skill-biased technical change) increase the inequality of earnings of skilled to unskilled workers, an effective minimum wage policy can perhaps act as a countervailing force to help low-

²³ As Maloney (2004) has shown, there are other potentially positive aspects in working as a self-employed worker, which may make a move to this sector be considered a positive outcome. Given the variance in conditions of work in this sector, it is difficult to make a normative statement about the entire package of job characteristics here. We base our statement on the difference in the average wage among the self-employed v. large-firm private sector employees.

wage workers and reduce poverty. We examine whether Honduras' minimum wage policy during 1990-2004 improved the welfare (in terms of wages and employment) of various types of workers in the covered and uncovered sectors.

The fact that minimum wages in Honduras are set at a lower rate for small firms (with less than 16 employees) than for large firms might lead one to believe that there would be compliance and positive wage effects in both sectors. However, we find that minimum wage laws are complied with only in large firms, where the bottom tale of the wage distribution is truncated and where minimum wages raise the average wages of workers. We also find that the negative employment effect dominates the positive wage effect such that total earnings of workers in large firms falls with minimum wage increases. The negative earnings effects for the low-paid workers (unskilled, women, rural, young and secondary earners) in the large firm sector are even larger.

Non-compliance in the small scale sector effectively means it behaves as an uncovered sector. We find evidence of absorption of labor into this sector and a decline in the average wage as a result of an increase in minimum wage. There is some evidence that it is not the low-paid workers that are being absorbed into this sector but their higher paid counterparts (skilled, men, urban, older and primary earners). Hence there is some evidence of substitution of higher paid workers for lower paid workers in the small firm private sector.

So where are the low-paid workers who are losing employment in the large firm sector going? We find that, in the case of the unskilled and women, they are being hired into the public sector (and at a higher rate than their higher paid counterparts). This is evidence of welfare improvement, or at a minimum no change in their welfare. However,

for the others, there is no evidence that they are finding better employment and one group, non-heads, is experiencing significantly higher unemployment as a result of minimum wage increases.

The evidence we present here, with the usual caveats with respect to the data and methodology, leads the conclusion that minimum wage policy in Honduras did not improving the welfare of most low wage workers during this period of rapid globalization.

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Table 1: Share of Workers Earning Less than, At, and More than the Minimum Wage by Sector (Average for 1990-2004)

	Less Than¹	At²	More Than³
Total	32.4%	9.3%	58.2%
Private Salaried Employee		11.1%	58.3%
Large	16.9%	12.4%	70.7%
Small	39.8%	9.7%	50.4%
Self-Employed	43.2%	7.1%	49.7%
Public	6.0%	5.3%	88.7%

¹Less than 90% of the Minimum Wage

²Within 10% of the Minimum Wage

³110% or more than the Minimum Wage

Table 2: Characteristics of Workers in Each Sector, Average 1990-2004

	Covered Sector		Uncovered Sector	
	Large Firms	Small Firms	Self-Employed	Public
% of Total Employees	24.0	36.3	31.2	8.6
Gender				
Male	67.7	73.1	59.2	49.9
Female	32.3	26.9	40.8	50.1
Age				
10-20	15.6	19.7	5.1	2.3
20-30	39.5	25.5	20.7	25.9
30-40	23.4	20.0	25.6	31.7
40-50	13.0	16.4	20.4	25.4
50 +	8.6	18.5	28.2	14.7
Education				
Less than primary ¹	8.4	21.9	24.7	3.0
Primary	52.9	61.8	62.1	22.5
Secondary	29.4	13.6	11.6	51.6
Higher	9.3	2.6	1.6	22.9
Region				
urban	67.6	45.2	40.2	72.7
rural	32.5	54.8	59.8	27.3
Industrial Sector				
Agriculture and Mining	21.5	39.9	36.2	0.8
Industry	37.1	10.6	16.0	0.0
Electricity	0.4	0.1	0.0	3.8
construcion	5.6	9.0	3.5	1.7
Commerce and Hotels	14.7	18.3	30.9	0.1
Transportation	3.1	3.2	2.9	5.0
Financial Services	6.8	1.5	0.8	1.0
Other Servics	10.9	17.5	9.7	87.7

¹Includes "do not know"

Table 3: Wage and Employment Effects on All Workers in each Sector

Panel A: Wage Equation¹

	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
Fixed-effects Estimates						
log(mw)	.212*** (0.080)	-.020* (0.179)	.338** (0.154)	.374 (0.340)	-	-
Arellano and Bond Estimates						
log(mw)	.208** (0.092)	-.190** (0.083)	.187 (0.121)	.150 (0.228)	-	-
<i>long-term impact</i>	<i>0.243</i>	<i>-0.294</i>	<i>0.201</i>	<i>0.226</i>		
Diagnostic Statistics	P-Values	P-Values	P-Values	P-Values	-	-
Sargan statistic	0.8951	0.9988	0.9988	1		
AR(1) test statistic	0.0084	0.0106	0.0228	0.0192		
AR(2) test statistic	0.3861	0.1141	0.1477	0.2348		

Panel B: Employment Equation²

	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
Fixed-effects Estimates						
log(mw)	-.908* (0.488)	-.577* (0.345)	-.523 (0.852)	-.247 (0.388)	-.293 (0.492)	-.127 (0.520)
Arellano and Bond Estimates						
log(mw)	-.530*** (0.203)	.430*** (0.151)	.014 (0.798)	.035 (0.391)	.392 (0.803)	.843* (0.504)
<i>long-term impact</i>	<i>-0.949</i>	<i>0.557</i>	<i>0.018</i>	<i>0.045</i>	<i>0.389</i>	<i>1.028</i>
Diagnostic Statistics	P-Values	P-Values	P-Values	P-Values	P-Values	P-Values
Sargan statistic	0.9993	1	1	1	0.9998	0.9992
AR(1) test statistic	0.0188	0.0673	0.0221	0.0529	0.0134	0.0048
AR(2) test statistic	0.5087	0.1985	0.4601	0.4573	0.0953	0.6619

Notes:

*significant at the 0.1% level

**significant at the 0.05% level

***significant at the 0.01% level

¹coeffieint on the log of real minimum wages from estimating eqn (1) with Arellano and Bond (1991)

²coeffieint on the log of real minimum wages from estimating eqn (2) with Arellano and Bond (1991)

All reported standard errors (in parentheses) are robust to heteroskedasticity.

P-values are reported for the Sargan test statistic and aurocorrelation test statistics.

Table 4: Arellano and Bond Estimates of the Wage and Employment Effects on Skilled and Unskilled Workers in each Sector

Panel A: Wage Equation¹

Skill Level	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Unskilled³</u> log(mw)	0.294*** (0.104)	-0.095 (0.161)	0.325 (0.277)	0.340 (0.234)	-	-
<u>Skilled⁴</u> log(mw)	0.079 (0.076)	-0.152 (0.214)	0.039 (0.097)	0.164 (0.222)	-	-

Panel B: Employment Equation²

	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Unskilled³</u> log(mw)	-1.369*** (0.400)	-1.444*** (0.499)	1.857*** (0.487)	-.220 (0.282)	-.974 (0.598)	-.265 (0.457)
<u>Skilled⁴</u> log(mw)	-.0732 (0.450)	.655*** (0.207)	-1.449 (1.009)	.333 (0.261)	1.283 (1.978)	2.546*** (0.641)

Notes:

*significant at the 0.1% level

**significant at the 0.05% level

***significant at the 0.01% level

¹coefficient on the log of real minimum wages from estimating eqn (1) with Arellano and Bond (1991) on unskilled and skilled workers separately.

²coefficient on the log of real minimum wages from estimating eqn (2) with Arellano and Bond (1991) on unskilled and skilled workers separately.

³Primary or less education

⁴Secondary or higher education

All reported standard errors (in parentheses) are robust to heteroskedasticity.

P-values are reported for the Sargan test statistic and aurocorrelation test statistics.

Table 5: Arellano and Bond Estimates of the Wage and Employment Effects on Male and Female Workers in each Sector

Panel A: Wage Equation¹

gender	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Women</u>						
log(mw)	.010 (0.085)	.007 (0.145)	.140 (0.234)	.519 (0.421)	-	-
<u>Men</u>						
log(mw)	.254*** (0.089)	.041 (0.069)	.345*** (0.168)	.342 (0.210)	-	-

Panel B: Employment Equation²

gender	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Women</u>						
log(mw)	-.535 (0.510)	.373 (0.348)	1.958*** (0.344)	-.547 (0.595)	-3.257* (1.386)	1.490 (0.797)
<u>Men</u>						
log(mw)	-.245 (0.274)	.537** (0.259)	-.434 (0.794)	.105 (0.345)	1.745*** (0.463)	.480 (0.460)

Notes:

*significant at the 0.1% level

**significant at the 0.05% level

***significant at the 0.01% level

¹coefficient on the log of real minimum wages from estimating eqn (1) with Arellano and Bond (1991) on men and women workers separately.

²coefficient on the log of real minimum wages from estimating eqn (2) with Arellano and Bond (1991) on men and women workers separately.

All reported standard errors (in parentheses) are robust to heteroskedasticity.

P-values are reported for the Sargan test statistic and autocorrelation test statistics.

Table 6: Arellano and Bond Estimates of the Wage and Employment Effects on Urban and Rural Workers in each Sector

Panel A: Wage Equation¹

Area	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Rural</u> log(mw)	.376** (0.222)	.058 (0.121)	.816 (0.229)	.185 (0.188)	-	-
<u>Urban</u> log(mw)	.110* (0.064)	-.032 (0.094)	.342** (0.166)	.040 (0.127)	-	-

Panel B: Employment Equation²

Area	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Rural</u> log(mw)	-1.091*** (0.371)	-.089 (0.516)	.884 (0.679)	-.979*** (0.261)	-.714 (0.564)	-.880 (2.123)
<u>Urban</u> log(mw)	-.844*** (0.177)	.331* (0.194)	-.532 (1.100)	.493 (0.392)	.995** (0.436)	.030 (0.641)

Notes:

*significant at the 0.1% level

**significant at the 0.05% level

***significant at the 0.01% level

¹coefficient on the log of real minimum wages from estimating eqn (1) with Arellano and Bond (1991) on urban and rural workers separately.

²coefficient on the log of real minimum wages from estimating eqn (2) with Arellano and Bond (1991) on urban and rural workers separately.

All reported standard errors (in parentheses) are robust to heteroskedasticity.

P-values are reported for the Sargan test statistic and autocorrelation test statistics.

Table 7: Arellano and Bond Estimates of the Wage and Employment Effects on Young and Older Workers in each Sector

Panel A: Wage Equation¹

Age	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Young³</u>						
log(mw)	0.294*** (0.104)	-0.095 (0.161)	0.325 (0.277)	0.340 (0.234)	-	-
<u>Older⁴</u>						
log(mw)	0.079 (0.076)	-0.152 (0.214)	0.039 (0.097)	0.164 (0.222)	-	-

Panel B: Employment Equation²

Age	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Young³</u>						
log(mw)	-1.794*** (0.325)	-.402 (0.153)	-.688 (1.331)	-.286 (0.902)	.489 (0.615)	-1.490 (0.982)
<u>Older⁴</u>						
log(mw)	-.522*** (0.115)	.295* (0.158)	-.777 (0.743)	-.176 (0.410)	-.647 (1.125)	.673 (0.564)

Notes:

*significant at the 0.1% level

**significant at the 0.05% level

***significant at the 0.01% level

¹coefficient on the log of real minimum wages from estimating eqn (1) with Arellano and Bond (1991) on young and older workers separately.

²coefficient on the log of real minimum wages from estimating eqn (2) with Arellano and Bond (1991) on young and older workers separately.

³Workers Ages 10-21

⁴Workers Ages 21-60

All reported standard errors (in parentheses) are robust to heteroskedasticity.

P-values are reported for the Sargan test statistic and aurocorrelation test statistics.

Table 8: Arellano and Bond Estimates of the Wage and Employment Effects on Heads of Households and Other Working Members in each Sector

Panel A: Wage Equation¹

Household	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Non-Head</u> log(mw)	.050 (0.078)	-.070 (0.125)	.385 (0.301)	.415 (0.373)	-	-
<u>Head</u> log(mw)	.361*** (0.108)	-.065 (0.152)	.026 (0.138)	.109 (0.291)	-	-

Panel B: Employment Equation²

Household	Covered Sectors		Uncovered Sectors			Unemp
	Large	Small	Public	Self-emp	Unpd Fam	
<u>Non-Head</u> log(mw)	-1.240*** (0.164)	-.002 (0.181)	-1.821 (1.214)	-.081 (0.291)	.597 (0.691)	2.528*** (0.866)
<u>Head</u> log(mw)	-.502* (0.291)	.469 (0.451)	-.424 (0.735)	.088 (0.394)	2.581* (1.579)	.295 (0.857)

Notes:

*significant at the 0.1% level

**significant at the 0.05% level

***significant at the 0.01% level

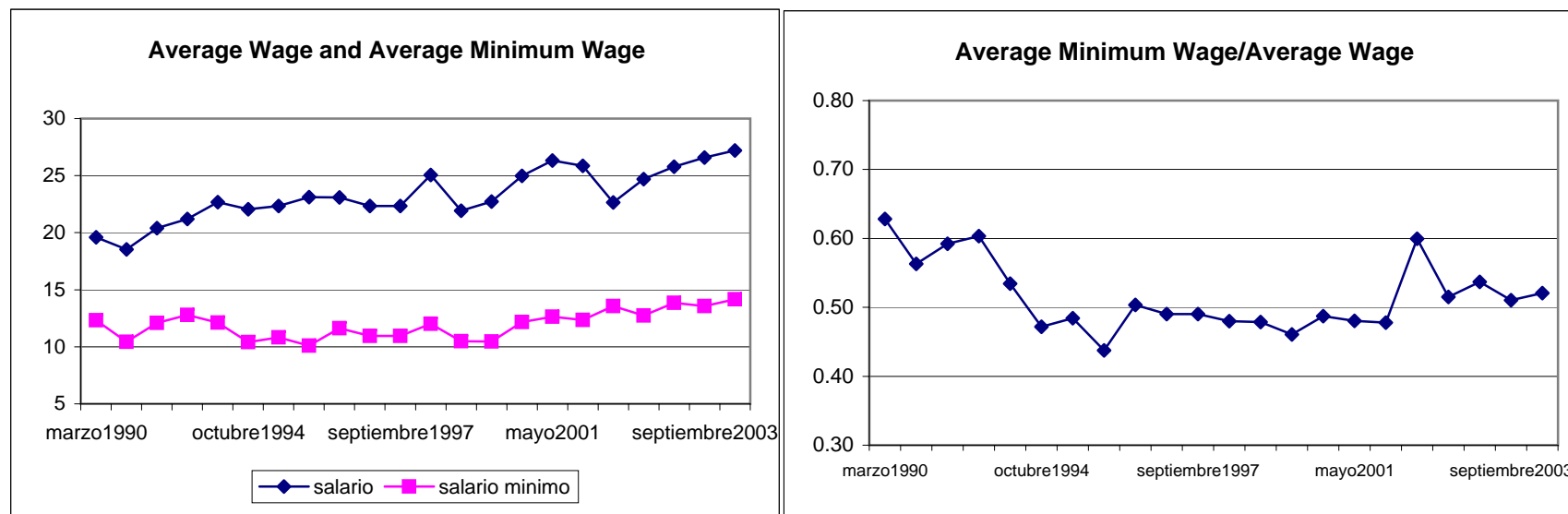
¹coefficient on the log of real minimum wages from estimating eqn (1) with Arellano and Bond (1991) separately for workers that are Heads and Non-Heads of Households.

²coefficient on the log of real minimum wages from estimating eqn (2) with Arellano and Bond (1991) separately for workers that are Heads vs. Non-Heads of Households.

All reported standard errors (in parentheses) are robust to heteroskedasticity.

P-values are reported for the Sargan test statistic and aurocorrelation test statistics.

Figure 1: Average Hourly Wage (W), Average Hourly Minimum Wage (W) in Lempiras (Dec. 1999 prices) and the Ratio of MW/W over Time for Salaried Workers in the Private Sector



Source: Authors' calculations from the Honduran Household Surveys.

Figure 2: Average Hourly Minimum Wage by Industry in Lempiras (Dec. 1999 prices)

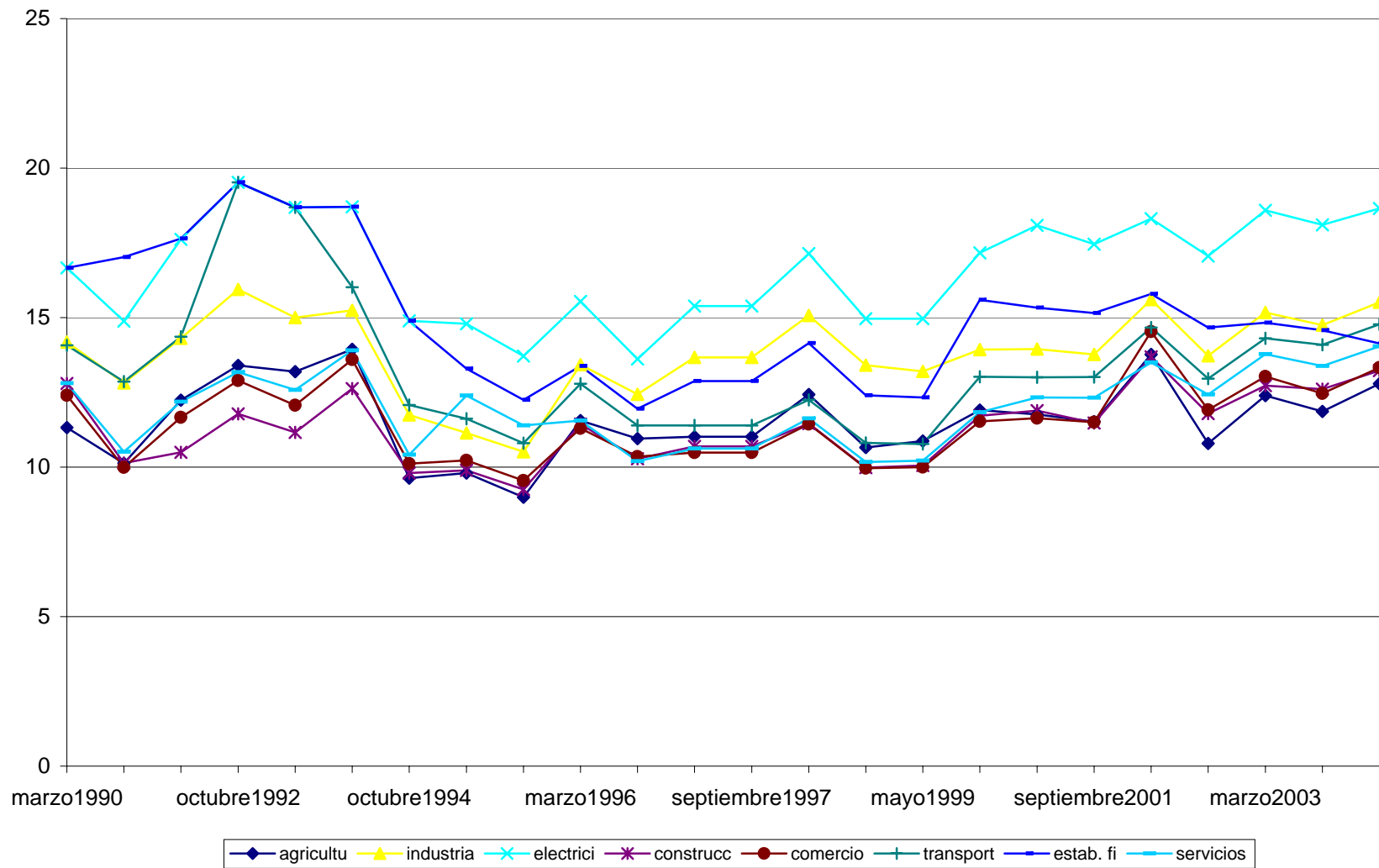


Figure 3: Kernel Density Distribution of the Log Wage Minus the Log Minimum Wage in Each Sector (1990-2004)

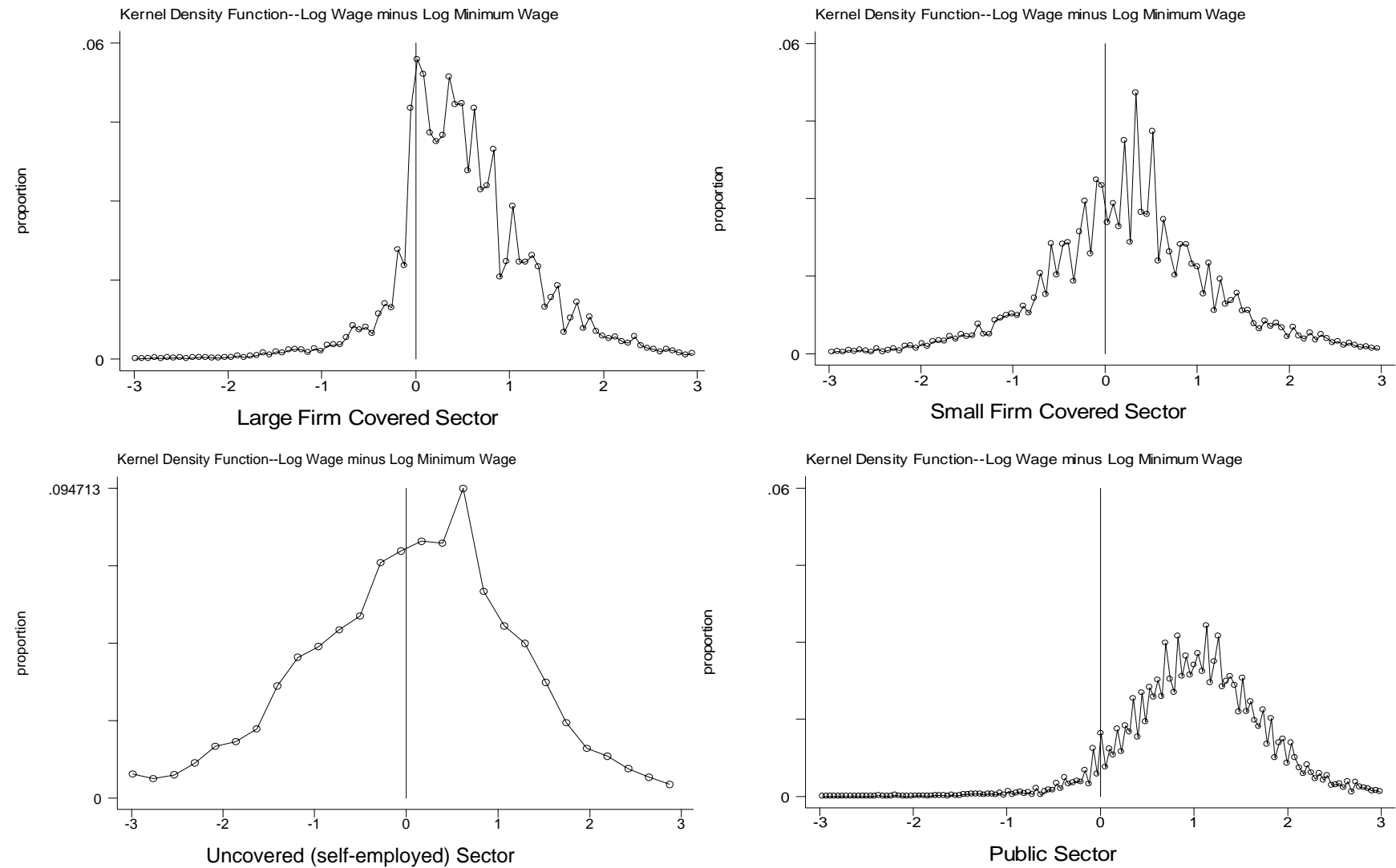


Table A1: Dates of the Household Surveys (PHSMP) and Minimum Wage Decrees

Dates of the Household Surveys	Period in which each Minimum Wage Decree is in effect*	No. of the Minimum Wage Decree*
1990 March	Jan 1990-Sep. '90	40-89
1991 March	Oct '90-July 14, '91	19-90
1992 March	July 15, '91-May '92	28-91
1992 Oct.	June '92-May' 93	25-92
1993 March	June '92-May' 93	25-92
1993 Oct.	June '93-Dec '94	30-93
1994 Oct	June '93-Dec '94	30-93
1995 March	Jan. '95-Feb '96	001-94
1995 Oct	Jan. '95-Feb '96	001-94
1996 March	March 1996-Jan 15, '97	005-96
1996 Sept	March 1996-Jan 15, '97	005-97
1997 June	Jan 16, '97- Dec '97	001-97
1997 Sept	Jan 16, '97- Dec '97	001-97
1998 March	Jan '98-June '99	001-98
1998 Sept	Jan '98-June '99	001-98
1999 May	Jan '98-June '99	001-98
1999 Sept	July '99-Dec '99	004-99
--	Jan '00-Sept '00	004-99
--	Oct '00-Jan '01	180-2000
2001 May	Feb '01-April '02	180-2000
2001 Sept	Feb '01-April '02	180-2001
2002 May	May '02-Dec '02	011
2002 Sept	May '02-Dec '02	011
2003 May	Jan '03-March '04	021-03
2003 Sept	Jan '03-March '04	021-03
2004 May	April '04-present	012-04

*Source: Secretaria de Trabajo y Seguridad Social, direccion General de Salarios, *Estudio Socio-Economico para la Revision del Slario Minimo, Ano 2004* , p. 53

Table A2: Real Daily Minimum Wage (Dec. 1999 Monthly Prices)

	Marzo_90	Marzo_91	Marzo_92	Octubre_9	Marzo_93	Octubre_9	Mayo_95	Oct_95	Marzo_96	Sept_96	Junio_97
Agriculture, Hunting and Fishing											
1 -15 workers	39.17	29.07	32.75	35.62	34.10	28.78	31.19	28.92	34.54	30.26	32.30
16+ workers	50.37	38.10	43.66	35.62	34.10	36.45	36.22	33.58	39.55	34.64	38.76
Non-Metalic Mining											
	55.39	42.03	48.06	53.00	50.74	54.20	52.31	48.51	54.40	47.66	51.29
Metalic Mining											
1 -15 workers	60.74	46.23	52.82	58.39	55.90	39.21	37.83	35.07	37.22	32.60	33.59
16+ workers	73.33	56.75	58.80	71.92	68.85	42.93	42.25	39.18	41.88	36.69	40.05
Manufacturing											
1 -15 workers	43.44	32.88	41.90	41.27	39.51	31.89	34.21	31.72	37.22	32.60	33.59
16+ workers	51.35	39.83	53.87	50.23	48.09	36.81	39.74	36.85	41.88	36.69	40.05
Utilities											
	64.81	49.60	55.99	65.07	62.30	49.64	49.30	45.71	51.81	45.39	51.29
Construction											
1 -15 workers	42.70	31.75	34.33	37.04	35.46	29.92	32.44	30.08	37.22	32.60	33.59
16+ workers	52.59	39.95	43.66	45.09	43.17	33.63	35.81	33.21	41.88	36.69	40.05
Trade, Hotels and Restaurants											
1 -15 workers	39.58	33.86	41.90	42.47	40.66	32.82	35.01	32.46	37.22	32.60	33.59
16+ workers	44.44	42.99	55.99	55.37	53.01	39.81	42.35	39.27	41.88	36.69	40.05
Transportation, Storage and Communication											
1 -15 workers	49.58	38.10	48.59	46.86	44.86	36.60	38.38	35.59	45.94	40.24	36.18
16+ workers	56.57	44.18	55.99	55.37	53.01	41.13	43.06	39.93	45.34	39.71	41.34
Financial Services											
1 -15 workers	71.48	56.75	58.80	65.07	62.30	49.64	40.59	37.64	45.94	40.24	38.76
16+ workers	71.48	56.75	58.80	65.07	62.30	49.64	45.88	42.54	45.34	39.71	46.51
Real Estate											
1 -15 workers	71.48	56.75	66.90	65.07	62.30	49.64	40.59	37.64	45.94	40.24	36.18
16+ workers	71.48	56.75	66.90	65.07	62.30	49.64	45.88	42.54	45.34	39.71	41.34
Business Services											
1 -15 workers	71.48	56.75	66.90	65.07	62.30	49.64	40.59	37.64	45.94	40.24	36.18
16+ workers	71.48	56.75	66.90	65.07	62.30	49.64	45.88	42.54	45.34	39.71	41.34
Communal Services											
1 -15 workers	43.71	33.11	33.10	41.61	39.84	31.98	40.59	37.64	37.22	32.60	33.59
16+ workers	50.43	38.99	39.08	49.09	46.99	36.15	45.88	42.54	41.88	36.69	40.05

Sept_97	Marzo_98	Sept_98	Mayo_99	Sept_99	Mayo_01	Sept_01	Mayo_02	Sept_02	Marzo_03	Sept_2003	Mayo_2004
32.30	35.04	30.60	30.60	34.34	34.60	33.73	35.25	32.83	36.82	35.85	37.91
38.76	43.22	37.74	37.74	43.70	48.62	47.39	49.47	46.08	50.30	48.97	50.45
51.29	57.14	49.89	49.89	57.23	60.55	59.02	61.03	56.85	61.97	60.34	62.16
33.59	36.39	31.77	31.77	36.42	36.33	35.41	38.72	36.07	40.44	44.06	41.65
40.05	44.32	38.70	38.70	45.79	50.35	49.07	52.71	49.10	53.46	56.74	53.64
33.59	36.39	31.77	31.77	36.42	36.33	35.41	38.72	36.07	40.44	39.37	41.65
40.05	44.32	38.70	38.70	45.79	50.35	49.07	52.71	49.10	53.46	52.05	53.64
51.29	57.14	49.89	49.89	57.23	54.76	53.37	61.03	56.85	61.97	60.34	62.16
33.59	36.39	31.77	31.77	36.42	36.33	35.41	38.72	36.07	40.44	39.37	41.65
40.05	44.32	38.70	38.70	45.79	50.35	49.07	52.71	49.10	53.46	52.05	53.64
33.59	36.39	31.77	31.77	36.42	36.33	35.41	38.72	36.07	40.44	39.37	41.65
40.05	44.32	38.70	38.70	45.79	50.35	49.07	52.71	49.10	53.46	52.05	53.64
36.18	39.19	34.22	34.22	41.62	41.09	40.05	44.06	41.04	46.54	45.31	47.40
41.34	44.81	39.13	39.13	47.35	52.08	50.76	51.09	47.59	51.88	50.51	52.04
38.76	44.20	38.59	38.59	60.67	54.76	53.37	61.03	56.85	61.97	60.34	62.16
46.51	52.99	46.27	46.27	60.67	60.55	59.02	61.03	56.85	61.97	60.34	62.16
36.18	39.19	34.22	34.22	45.79	41.09	40.05	44.06	41.04	46.01	45.31	47.40
41.34	44.81	39.13	39.13	47.35	52.08	50.76	51.09	47.59	51.88	50.51	52.04
36.18	39.19	34.22	34.22	45.79	41.09	40.05	44.06	41.04	41.04	39.96	37.77
41.34	44.81	39.13	39.13	47.35	52.08	50.76	51.09	47.59	47.59	46.33	43.80
33.59	36.39	31.77	31.77	36.42	36.33	35.41	38.72	36.07	40.44	39.37	41.65
40.05	44.32	38.70	38.70	45.79	50.35	49.07	52.71	49.10	53.46	52.05	53.64